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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/662,934	09/15/2003	Catherine A. Morley	17310-293333	2027

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EXAMINER

AHMED, SHAMIM

ART UNIT PAPER NUMBER

1765

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/662,934

Applicant(s)

MORLEY ET AL.

Examiner

Shamim Ahmed

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

3. Claims 20-21 and 23-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 20 recites the limitation "the relative etch rate" in line 3 is indefinite because it is unclear whether the etch rate is relative to masked and unmasked areas or relative to the mask and the substrate.

5. Claim 23 recites the limitation "the resist mask comprising a plurality of mask openings and mask lands areas **sized and spaced**" in lines 2- 3 is indefinite because it is unclear whether both the openings and lands are sized and spaced or only mask lands are sized and spaced.

6. Claim 30 recites the limitation "a plurality of mask openings and mask lands areas that are **sized and spaced**" in lines 2- 3 is indefinite because it is unclear whether

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both the openings and lands are sized and spaced or only mask lands are sized and spaced.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3, 11,13-22 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Pasco (5,846,442).

Pasco discloses a single step, partial etching process to provide a contoured feature by applying a patterned photoresist mask with a plurality of openings and mask land features to a substrate, wherein the widths and spacing of the mask land features are selected in such that the etch depth in the transition area such as corner, fillet radius, slope or rounded edge is less than the etch depth to an adjacent or partially etched area of the substrate (see abstract, col.3, lines 63-col.4, lines 67).

As to claim 19, Pasco also teaches that the widths and spacing of the plurality of mask openings and masked land areas are selected in such that the etched features having transition areas with reduced corner rounding (see figure 1D).

As to claim 21, Pasco discloses that the partial etching process can be used to fabricate head suspension assembly (col.5, lines 11-23).

So, Pasco inherently teaches the substrate comprises steel.

As to claim 22, Pasco's plurality of mask openings and mask lands includes the claimed at least first, second and third mask area.

As to claim 30, Pasco's teaching of the contoured features formed in the substrate resembles with the claimed texturing the substrate surface.

9. Claims 23-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Misaka et al (5,421,934).

Miska et al teach a process of etching a substrate, wherein applying a patterned resist mask to a substrate and the resist mask comprising a plurality of mask openings and lands areas are sized and spaced in such that etching is advanced in the direction of depth as compared with in a lateral direction and etching rate in the direction of depth increases with the incremental increase of the width of the hole or opening (col.12, lines 7-12 and figure 9a).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 4-10, 12 and 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pasco (5,846,442) as applied to claims 1-3,11,13-22 and 30 above, and further in view of Dautartas et al (5,935,451).

Pasco discussed above in the paragraph 6 but remain silent about the diameter of the mask land areas in the range of about 10-100 microns.

However, in a method of etching a substrate, Dautartas et al teach that the distance between etched portions or the average distance between the mask land areas is 10 micrometer (microns), but would vary depending upon the etchant (col.2, lines 46-63).

Therefore, it would have been obvious to one skilled in the art at the time of claimed invention to combine Dautartas et al's teaching into Pasco's process for quickly and economically form etched features with predetermined distance there between by controlling the spacing between the mask as taught by Dautartas et al.

As to claims 7-10, it would have been obvious to one skilled in the art at the time of claimed invention to optimize the same, since it has been held that discovering the optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

As to claim 12, prior to the application of the masking layer, it would have been obvious to one of ordinary skilled in the art at the time of claimed invention to perform an etching the base substrate for achieving the desired substrate thickness and /or having a contamination free surface.

As to claims 31-32, it would have been obvious to have a smooth or rough surface after etching/texturing the substrate.

Conclusion

12. The prior art made of record listed in PTO-892 and considered pertinent to applicant's disclosure.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shamim Ahmed whose telephone number is (571) 272-1457. The examiner can normally be reached on M-Thu (7:00-5:30) Every Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine G. Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Shamim Ahmed
Primary Examiner
Art Unit 1765

SA
April 14, 2005